

PATENT COOPERATION TREATY

PCT

REC'D 05 NOV 2001

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0005-GL-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/18163	International filing date (day/month/year) 29 June 2000 (29.06.2000)	Priority date (day/month/year) 02 July 1999 (02.07.1999)
International Patent Classification (IPC) or national classification and IPC IPC(7): C23C 4/00, 4/02, 4/04, 4/06, 4/10, 4/12, 16/453, 16/513, 16/46 and US Cl.: 427/446, 452, 453		
Applicant HUNT, ANDREW TYE] MICROCOATING TECHNOLOGIES, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 31 January 2001 (31.01.2001)	Date of completion of this report 28 September 2001 (28.09.2001)
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Shrive Beck Telephone No. (703) 308-0661 Jean Proctor Paralegal Specialist

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/18163

I. Basis of the report

1. With regard to the **elements** of the international application: *

- ☒ the international application as originally filed.
- ☒ the description:
pages 1-17 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the claims:
pages 18-22, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the drawings:
pages 1-6, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/18163

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The question whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application,

☒ claims Nos. 41-46

because:

☐ the said international application, or the said claim Nos. _____ relate to the following subject matter which does not require international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 41 and 42 are so unclear that no meaningful opinion could be formed (*specify*):

Product claims 41 and 42 do not contain any structural features which would define the claimed product. In fact, said claims only relate to a way of using a deposition method for obtaining said products, rather than clearly defining them in terms of their structural features. The intended limitations are therefore not clear from these claims, which renders a search meaningless.

Applicants' attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect to which no international search report has been established need not be the subject of an international preliminary examination (Rule 6.1(e) PCT).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 43-46

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/18163

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>7, 8, 11, 12, 14-16, 27-29, and 32-40</u>	YES
	Claims <u>1-6, 9, 10, 13, 17-26, 30, 31, and 47</u>	NO
Inventive Step (IS)	Claims <u>15, 16, and 36</u>	YES
	Claims <u>1-14, 17-35, 37-40, and 47</u>	NO
Industrial Applicability (IA)	Claims <u>1-40 and 47</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/18163

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Certain Documents Cited

1. Certain published documents (Rule 70.10)

Application No

Publication Date

Filing Date

Priority date (valid claim)

Patent No.

(day/month/year)

(day/month/year)

(day/month/year)

None

None

None

None

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure

Date of written disclosure referring to

non-written disclosure

(day/month/year)

(day/month/year)

None

None

None

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/18163

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

V. 2. Citations and Explanations:

Claims 1-6, 9, 10, 13, 17-26, 30, 31, and 47 lack novelty under PCT article 33(2) as being anticipated by EP 0 709 487 A. This reference teaches:

With respect to claim 1, a method for concentrated heat deposition of a coating on a substrate, said method comprising the steps of: (a) providing at least one coating heat source to deposit the coating on the substrate, the coating heat source also capable of heating a section of the substrate; and (b) moving one of the substrate or the at least one coating heat source relative to the other such that the substrate is not damaged by the at least one coating heat source [page 1, abstract].

With respect to claims 2-4 and 6, a method wherein the substrate is vitreous, non-vitreous, a mixture thereof, or glass [page 1, abstract and page 3, line 27].

With respect to claim 5, a method wherein the substrate can be thermally shocked [page 1, abstract].

With respect to claim 9, a method wherein the substrate is incapable of plastic deformation [page 2, lines 12-13].

With respect to claim 10, a method wherein the at least one coating heat source is at least one flame [page 1, abstract].

With respect to claim 13, a method wherein the at least one coating heat source raises the temperature of the substrate by no more than 250 degrees C [page 4, line 51 and page 6, Table 1].

With respect to claims 17-19, a method wherein the substrate is not fractured, warped, deformed, or melted by the at least one coating heat source [page 2, lines 12-13].

With respect to claim 20, a method wherein the moving of one of the substrate or the at least one coating heat source relative to the other is at a velocity between 1 to 2000 inches per minute [page 5, lines 40-42].

With respect to claim 21, a method wherein the substrate is preheated prior to forming the coating [page 4, line 51].

With respect to claim 22, a method wherein the maximum temperature of the substrate is between 50 and 2000 degrees C.

With respect to claims 23-26, a method wherein the coating is a/an oxide, metal, mixture thereof, or nitride [page 1, abstract and page 4, lines 26-33].

With respect to claims 30 and 31, a method wherein the step of moving one of the substrate and the at least one coating heat source

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/18163

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

relative to the other comprises depositing the coating on a first path across a surface of the substrate and, further, that said first path is linear [page 5, lines 42-44].

With respect to claim 47, a method wherein the at least one heat source comprises deposition gases, said deposition gases having a temperature within 50 degrees C of the temperature of the section of the substrate [page 6, Table 1].

Claims 14, 32-35, and 37-40 lack an inventive step under PCT article 33(3) as being obvious over EP 0 709 487 A.

With respect to claim 14, in the absence of unexpected results, the mere duplication of parts is obvious and the claim therefore lacks an inventive step.

With respect to claims 32-35 and 37-40, in the absence of unexpected results, the pattern of movement of the coating heat source relative to the substrate is obvious and these claims therefore lack an inventive step.

Claims 7 and 8 lack an inventive step under PCT article 33(3) as being obvious over EP 0 709 487 A in view of US 5,540,959.

With respect to claims 7 and 8, US 5,540,959 teaches a method, similar to that taught by EP 0 709 487 A in that it too teaches a method for preparing a coated substrate by concentrated heat deposition, in which the substrate can be either float glass or plastic [column 6, lines 55-60]. It would have been obvious to one of ordinary skill in the art to coat either float glass or plastic as doing so is taught in the art. These claims therefore lack an inventive step.

Claims 27 and 29 lack an inventive step under PCT article 33(3) as being obvious over EP 0 709 487 A in view of US 5,364,522.

With respect to claims 27 and 29, US 5,364,522 teaches a method, similar to that taught by EP 0 709 487 A in that it too teaches a method for preparing a coated substrate by concentrated heat deposition, in which the coating can be either boride or phosphide [title and column 7, line 5]. It would have been obvious to one of ordinary skill in the art to deposit either a boride or a phosphide coating as doing so is taught in the art. These claims therefore lack an inventive step.

Claims 11, 12, and 28 lack an inventive step under PCT article 33(3) as being obvious over EP 0 709 487 A in view of EP 0 491 521 A.

With respect to claim 11, EP 0 491 521 A teaches, in a method similar to that taught by EP 0 709 487 A in that it too teaches a method for preparing a coated substrate by concentrated heat deposition, using a plasma torch as the heat source [page 2, line 35]. It would have been obvious to one of ordinary skill in the art to utilize a plasma torch in the method taught by EP 0 709 487 A as doing so is taught in the art. This claim therefore lacks an inventive step.

With respect to claim 12, in the absence of unexpected results, the mere duplication of parts is obvious. As noted above, it would have been obvious to use a plasma torch as a heat source. It is therefore further obvious that one heat source be a flame while the other be a plasma torch, as the use of both in depositing films is known in the art (as taught by EP 0 491 521 A). This claim therefore lacks an inventive step.

With respect to claim 28, EP 0 491 521 A further teaches, in a method similar to that taught by EP 0 709 487 A in that it too teaches a method for preparing a coated substrate by concentrated heat deposition, a method wherein the coating is a carbide. It would have been obvious to one of ordinary skill in the art to use the method of EP 0 709 487 A to deposit a carbide coating as doing so is taught in the art. This claim therefore lacks an inventive step.

Claims 1-40 and 47 possess industrial applicability as defined by PCT Article 33(4). The method of claims 1-40 and 47 finds industrial applicability in the application of abrasion resistant coatings on glass substrates such as optical lenses, or plastic substrates such as plastic safety glasses.

Claims 15, 16, and 36 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest cooling the substrate between deposition by coating heat sources in the manner claimed by the applicants.

----- NEW CITATIONS -----

US 5,540,959 A (WANG) 30 July 1996, see column 6, lines 55-61.

US 5,364,522 A (WANG) 15 November 1994, see column 2, lines 55-60.